

Harnessing Massive Computing Power

Capt John Kresho
United States Marine Corps
9 Feb 2001

How to Answer Questions of Interest

- Large Models
 - Hours to Setup
 - Many Details
 - Long Run Duration
 - Produce Single Point of Data
- Data Farming with Agent-Based Models(Distillations)
 - Easy to Setup
 - Short Run Duration
 - Produce Many Data Points
 - “Grow” Data quickly

How to Grow Data

- Execute distillation varying initial conditions and parameters.
- Explore resultant data space using visualization/analysis tools
- Grow data by expanding or increasing the resolution of initial conditions and parameters. Grow Data by:

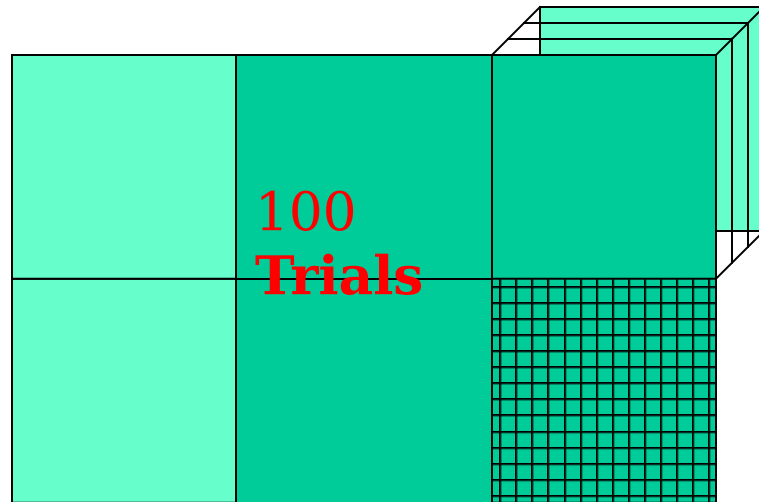
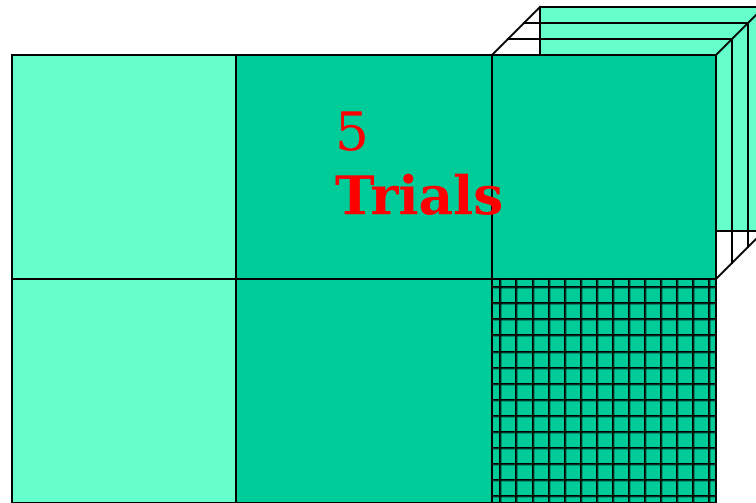
Adding dimensions

Increasing fidelity

Expanding

bounds

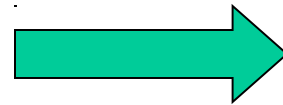
Increasing trials



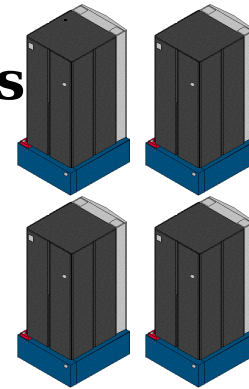
Finding Computer Power

Option 1

**Generate scenario
and explore
appropriateness**



**Send scenario
parameter
specifications
to MHPCC**



**Many,
Many
Runs**

**IBM
Mainframe**



**2-4 days
turnaround**

**Modify
Parameters
based on
results**



Finding Computer Power

Option 2

NT Server
Cluster Controller

CONDOR
submits jobs to
other computers not
using their processors

NT
Workstations

